

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re patent application of: )  
Mark G. LUEHRMANN, et al. ) Before the Examiner  
Serial No. 09/856,745 ) Bradley J. Van Pelt  
Filed September 24, 2001 ) Group Art Unit 3682  
May 17, 2005 )  
Connecting Rod with Profiled )  
Bore for Increased Load )  
Capability )

**SUBMISSION OF**  
**APPEAL BRIEF**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an enveloped addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231 on

May 17, 2005

(Date of Deposit)

James M. Durlacher

Name of Registered Representative

*James M. Durlacher*  
Signature

May 17, 2005

Date of Signature

Board of Patent Appeals and Interferences  
Assistant Commissioner for Patents  
Washington, D.C. 20231  
Sir:

In response to the Notification of Non-Compliant Appeal Brief dated May 4, 2005, a complete new brief in compliance with 37 CFR 41.37 is being submitted in triplicate. Included with the Appeal Brief, in the attached Exhibit, is a Certified Copy of a Certificate of Amendment from the Indiana Secretary of State evidencing the change of name of the Assignee from Cummins Engine Company, Inc. to Cummins Inc.

No extensions of time are believed to be required and no additional fees are believed due. The Notification did not indicate any fee deficiency nor that another fee under §41.20(b)(2) was required. However, the Board is authorized to provide any additional extensions of time and charge any additional fees which are required to Deposit Account No. 23-3030.

Respectfully submitted,

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**APPEAL BRIEF**

Board of Patent Appeals and Interferences  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

For its Appeal Brief, Appellant submits the following information, analysis, and arguments. This Appeal Brief is formatted in accordance with the form suggested in the MPEP. If the Board requires anything further from the Appellant, please advise the undersigned attorney of record.

**1. REAL PARTY IN INTEREST**

The real party in interest is Cummins Inc. The Assignee at the time the parent application was filed was Cummins Engine Company, Inc. Subsequent to the parent application filing date, there was a change of corporate name effected through the Indiana Secretary of State. Included as Exhibit A to this Appeal Brief, and provided as part of the

Appendix, is a copy of the change of name (Certificate of Amendment), establishing that the current owner of the subject patent application and the real party in interest in terms of this Appeal is Cummins Inc.

**2. RELATED APPEALS AND INTERFERENCES**

There are no related appeals and/or interferences.

**3. STATUS OF CLAIMS**

Claims 26-35 are pending in the subject patent application and these ten (10) claims are being appealed. None of the canceled claims 1-25 are being appealed. A copy of claims 26-35 is included in the Claims Appendix.

**4. STATUS OF AMENDMENTS**

The subject patent application stands under FINAL rejection and no amendments have been filed subsequent to the Final Office Action dated October 26, 2004.

**5. SUMMARY OF THE CLAIMED SUBJECT MATTER**

The claimed subject matter is directed to the combination of an engine cylinder piston (53) and a connecting rod (51) that are assembled together by the use of a piston pin (52). Under load, the piston pin can flex and, in order to maximize the load carrying capacity of the pin, the piston pin bore (62) through the connecting rod is profiled at opposite ends with relief portions (60, 61) that are curved in order to accommodate end

deflection of the piston pin. Support for this summary is found in claim 26, as represented for this Appeal, of the CIP application filed September 24, 2001.

## **6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

(a.) One ground of rejection to be reviewed on appeal includes the Examiner's Final rejection of claims 26-35 under 35 U.S.C. §103(a) based on a combination of Justinien et al. (U.S. Patent No. 3,161,185) in view of Fangman (U.S. Patent No. 3,479,929). Appellant takes the position that claims 26-35 should be allowed.

(b.) Another ground of rejection to be reviewed on appeal pertains to the Examiner's interpretation of the Justinien et al. patent in terms of "rods 8" and the "profiled bore sections".

(c.) Another ground of rejection to be reviewed on appeal pertains to the Examiner's conclusion that there is motivation to combine the Justinien et al. patent and the Fangman patent.

## **7. ARGUMENT**

The three issues presented in Section 6 of this Appeal Brief are separately set forth with a more detailed explanation of each, followed by Appellant's arguments in support of patentability.

- (a.) The Combination of Justinien et al. And Fangman Does Not Create The Claimed Invention.

This issue pertains to the overall rejection of claims 26-35 under 35 U.S.C. §103(a) based upon Justinien et al. in view of Fangman. The Examiner contends not only that it would be obvious to combine these two references, but also that the result of doing so is the creation of the claimed invention. Appellant disagrees.

In terms of independent claims 26 and 31, the Examiner relies on the Justinien et al. patent for all of the claimed elements except that the “bore” receiving the pin is not integral with the connecting rod. The Examiner believes that the Fangman patent provides this deficiency. As best understood, the Examiner acknowledges that in Justinien et al. the central ring 14 has a radiused curvature that is contacted by rods 8 (ten total, see FIG. 3). The Examiner presumably accepts the obvious fact that ring 14 is not part of the connecting rod, and that it is purposefully configured as a separate and distinct component. The Examiner also presumably understands that introducing the “bore” disclosure from Fangman requires removal of the central ring 14. The purpose behind ring 14 is explained in column 3, lines 35-43, of the Justinien et al. patent. An understanding of the structure and purpose behind ring 14 makes it clear that the theory and focus of the Justinien et al. patent would be significantly transformed once ring 14 is removed.

Further, there is nothing in the Fangman disclosure that suggests or supports what the Examiner wants to do in terms of totally eliminating ring 14 from the Justinien et al. structure. As will be noted, the Fangman patent only discloses a pin with a plurality of arcuate surfaces described in the specification as having an I-beam shape. What the Examiner would like to call a “bore” is a non-cylindrical “aperture 22”. To the extent

that the common understanding of the term “bore” is a drilled hole, a non-cylindrical aperture would not correspond.

Further, what the Fangman patent discloses and all that it discloses in terms of the aperture and pin construction is that with an I-beam shaped pin and a non-cylindrical aperture, there will be only partial contact and not full cylindrical contact between the pin and the “bore”. With this partial (point or edge) contact the concept of “bore” profiling for added load bearing capacity is irrelevant and would never be assumed from the Fangman patent.

The shapes of Fangman are critical in terms of its focus which is to address the fact that the top of the piston gets hotter than the lower portion and this results in unequal thermal expansion and distortion of the piston into an inverted conical shape. There is nothing here about profiling the bore for improved load carrying capacity.

Removal of ring 14 from the Justinien et al. structure as the Examiner wants to do means that the rods 8 will not contact the connecting rod bore. A simple visual examination of FIGS. 2 and 3 in the Justinien et al. patent confirm this fact. Removing ring 14 creates a gap between the rods 8 and the connection rod and nothing more. Do we also have to remove rings 11? If we do remove rings 11, do we then increase the number of central rods 9 and/or their diameter? Do we increase the diameter of rods 8? Perhaps we are supposed to insert the Fangman I-beam shaped pin. There is absolutely no way to tell what the Examiner expects to happen once ring 14, and perhaps rings 11 are removed. There is also no suggestion or teaching in Justinien et al. that those members could be removed and/or the connecting rod profiled in some manner. We do know that for contact with the connecting rod bore some type of significant design

change to the Justinien et al. structure is required and no one knows the performance consequences once this structure is reconfigured. What we do know is that this type of change completely distorts and changes the entire theory and focus of the Justinien et al. invention. This goes far beyond what is permitted by the Examiner and validates that hindsight speculation is being used. We also know that the result of combining Justinien et al. and Fangman is not the creation of Appellant's claimed invention. Even if we agree that the Fangman disclosure does not require the insertion of an I-beam shaped pin, what we do obtain from Fangman is that the points of contact are just that, points of contact rather than full cylindrical contact.

(b.) The Examiner's Interpretation Of The Justinien et al. Patent In Terms Of "Rods 8" And The "Profiled Bore Sections" Is Flawed.

The Examiner states that Justinien et al. discloses a structure that includes "a piston pin (8) constructed and arranged for connecting together said piston and said connecting rod". A single pin is able to achieve the connection. In the embodiment of FIGS. 2 and 3 of the Justinien et al. patent, there are ten (10) peripheral "rods" 8 that must cooperate with central rods 9, balls 10, and rings 11 to create the piston-to-connecting rod connection. There is no single piston pin 8 that is constructed and arranged to connect together the piston and the connecting rod. The only way that this connection is created is by a very elaborate combination of multiple components, not just one [piston pin] rod 8. A brief look at FIGS. 2 and 3 of the Justinien et al. patent confirms this fact.

The independent claims 26 and 31 recite “a piston pin” and the phrase “resulting in piston pin deflection”. This language is singular as to both the piston pin and the piston pin deflection. It is this single pin that achieves the described connection. Appellant is not claiming multiple pins with multiple pin deflections. Presumably, the Justinien et al. structure would have a total of at least ten (10) deflections for rod 8 and some plurality of deflections for rods 9. The different interaction and performance of deflecting a bundle of rods as opposed to a single solid pin involves a great deal of speculation. It is suggested that no one can predict precisely what occurs with the structure. One thing that we do know is that if two pins or rods are placed side-by-side and then bent in a direction, the deflections are different and the two rods behave differently, depending on their inner or outer location relative to the direction of bending. There is no basis in fact or theory for the Examiner to contend that a large bundle of multiple rods of different lengths are equivalent to “a piston pin”. There is a huge difference between deflection of the Justinien et al. multiple rod design and the single piston pin design of the Appellant. Further, a single rod isolated out of the Justinien et al. structure is unable to perform any function in terms of pinning or connecting the connecting rod to the piston.

In the Examiner’s rejection, the opposite ends of ring 14 are treated as the first and second profiled bore sections as recited in the pending and rejected claims. The Examiner refers to column 3, lines 40-45, for support. However, it is Appellant’s “bore” that is profiled, not an intermediate component. Once the Examiner discards ring 14 so that the “bore” will be integral with the connecting rod, there are no profiled bore sections remaining. There is nothing else in Justinien et al. to show a profiled structure.



Consequently, what the Examiner would like to do is rely on ring 14 for the geometry of its ends and then throw ring 14 away so that the bore that receives the pin will be integral with the connecting rod. The “bore” being added from Fangman for its integral nature relative to the connecting rod does not have profiled bore sections.

The Examiner is not entitled to reject the claims by using two different prior art combinations at the same time for the same claim and picking to retain a component of the prior art when it suits his purposes for one part of the rejection and then discard that component when it does not suit his purpose for another part of the rejection. When the Examiner needs a bore that is integral with the connecting rod, he throws away ring 14. However, when the Examiner does this, he also throws away any profiled bore sections.

(c.) The Examiner’s Contention That There Is Motivation To Combine The Justinien et al. Patent And The Fangman Patent Is Flawed

The Examiner characterizes Justinien et al. (see page 4 of the Final Office Action) as being equivalent to the claimed invention except that the bore is not integral with the connecting rod due to the use of ring 14. We know that this is not true in view of the significant difference between Appellant’s use of a single piston pin versus Justinien et al.’s multiple peripheral rods 8 and multiple central rods 9. It is not appropriate to first misstate or mischaracterize the similarities of the prior art to the claimed invention and then build upon that error to establish the requisite motivation.

Neither cited reference discloses, suggests, or teaches the combination that the Examiner is attempting to make. Before obviousness may be established, the Examiner must show that there is either a suggestion in the art to produce the claimed invention or a

compelling motivation based on sound scientific principles. Ex parte Kranz, 19 USPQ2d 1216, 1218 (Bd. Pat. App. & Inter., 1990). The case law makes it clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is vigorous application of the requirement for a showing of the teaching or motivation to combine prior art references. C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340 (Fed. Cir. 1998). Obviousness cannot be established by combining the teachings of prior art in order to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. In re Geiger, 2 USPQ2d 1276 (Fed. Cir. 1987). It is improper to reject the claimed invention for obviousness when nothing in the cited references, either alone or in combination, suggests or teaches the claimed invention. Evidence of teaching or suggestion is “essential” to avoid hindsight. In re Fine, 5 USPQ2d 1596 (Fed. Cir. 1988). Stated slightly differently, the mere fact that the prior art may be modified to reflect features of the claimed invention does not make modification, and hence the claimed invention, obvious unless the desirability of such modification is suggested by the prior art. In re Fritch, 23 USPQ2d 1780 (Fed. Cir. 1992).

(d.) Conclusion

In view of the reasons, analysis, and arguments submitted in this Appeal Brief, and with thoughtful consideration to what the two cited references do and do not disclose, claims 26-35 are respectfully requested to be allowed. The required fee for this Appeal Brief under 41.20(b)(2) is submitted herewith by a credit card authorization.

Respectfully submitted,

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